EZ Cable/DSL Router

SMC7004BR

User Guide

Trademarks:

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FCC Interference Statement:

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against radio interference in a commercial environment. This equipment can generate, use and radiate radio frequency energy and, if not installed and used in accordance with the instructions in this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures are necessary to correct the interference.

CE Declaration of Conformity:

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022/A1 Class B, and EN 50082-1. This meets the essential protection requirements of the European Council Directive 89/336/EEC on the approximation of the laws of the member states relation to electromagnetic compatibility.

Table of Contents

Chapter 1 Introduction

Congratulations on your purchase of the SMC7004BR. This product is specifically designed for small office and home office needs. It provides a complete SOHO solution for Internet surfing and for sharing office resources. Step-by-step instructions make installation easy. Before installing and using this product, please take the time to read this manual for complete operating information.

1.1 Functions and Features

- **Broadband modem and IP sharing**

  - connects multiple computers to a broadband (cable or DSL) modem or an Ethernet router to surf the Internet.

- **Auto-sensing Ethernet Switch**

  - equipped with a 4-port 10/100Mbps auto-sensing Ethernet switch.

- **VPN supported**

  - supports multiple PPTP sessions and allows you to set up VPN server and VPN clients.

- **Printer sharing**

  - embeds a print server to allow all of the networked computers to share one printer.

- **Firewall**

  - all unwanted packets from outside intruders are blocked to protect your Intranet.

- **DHCP server supported**

  - all of the networked computers can retrieve TCP/IP settings automatically from the SMC7004BR.

- **Web-based configuring**

- configurable through any networked computer's web browser using Netscape or Internet Explorer.

- **Access Control supported**

  - allows you to assign different access right for different users.

- **Virtual Server supported**

  - enables you to expose WWW, FTP and other services on your LAN to be accessible to Internet users.

- **User-Definable Application Sensing Tunnel**

  - users can define the attributes to support the special applications requiring multiple connections such as Internet gaming, video conferencing, Internet telephony, et al. Then this product can sense the application type and open a multi-port tunnel for it.

- **DMZ Host supported**

  - allows a networked computer to be fully exposed to the Internet; this function is used when the special application sensing tunnel feature is insufficient to allow an application to function correctly.

1.2 Packing List

- SMC7004BR Broadband Router
- Installation CD
- Power adapter
- Two CAT-5 UTP Ethernet cables

Chapter 2 Hardware Installation

2.1. Panel Layout

2.1.1. Front Panel

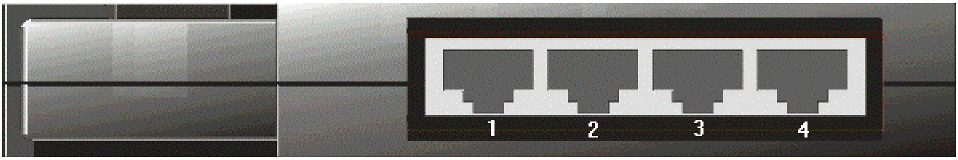


Figure 2-1 Front Panel

1 - 4 LAN port socket (RJ-45). These are where you will connect to devices on your local area network. (adapter, hub, or switch, e.g.)

2.1.2. Rear Panel



Figure 2-2 Rear Panel

PRINT Parallel port connector (25-pins D-type female). This is where you connect the shared printer.

WAN WAN port socket (RJ-45). This is where you connect to your Cable or DSL modem or an Ethernet router.

COM Serial port connector (9-pins D-type male). This is where you connect your 56K modem. (This port is also a console port.)

2.1.3. Top Panel

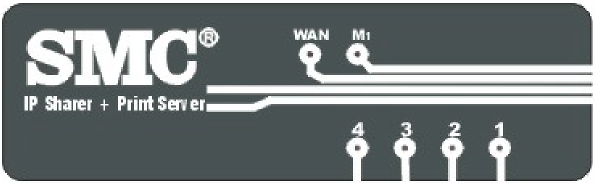


Figure 2-3 Top Panel

LAN Port 1-4 LAN port indicators, *Green*. The LED flashes when the LAN port is sending or receiving data.

WAN WAN port indicator, *Green*. The LED flashes when the WAN port is sending or receiving data.

M1 System status indicators, *Orange*. M1 flashes once per second to indicate the system is functioning properly.

2.1.4. Left Side Panel

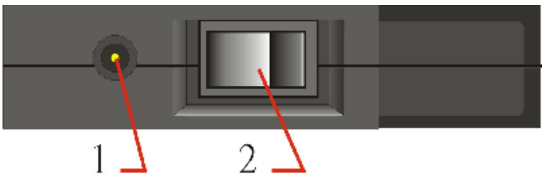


Figure 2-4 Left Side Panel

1. Power Power inlet. This is where you connect the included power adapter. *Note: The included power adapter is DC 5V/1A. Using the wrong type of power adapter may cause damage*.

2. Switch Power switch.

2.2. Installation Requirements

The SMC7004BR can be positioned at any convenient place in your office or home. No special wiring or cooling requirements are needed. You should, however comply with the following guidelines:

- Place product on a flat horizontal plane.
- Keep product away from any heating devices.
- Do not place product in a dusty or wet environment.

The recommended operational specifications of this product are:

Temperature	0 ºC ~ 55 ºC
Humidity	5 % ~ 90 %

You should also remember to turn off the power, remove the power cord from the outlet, and keep your hands dry when you install the hardware.

2.3. Procedure for Hardware Installation

1. **Set up LAN connection:** Connect an Ethernet cable from your computer's Ethernet adapter to one of the LAN ports.

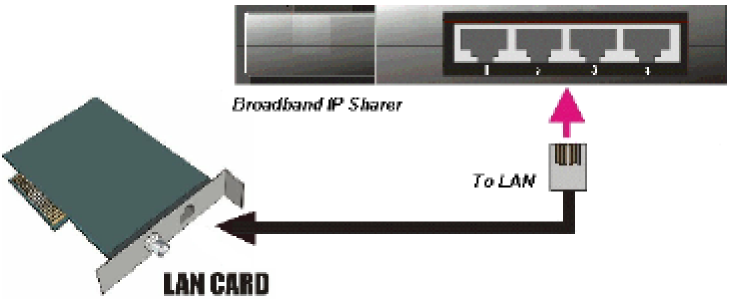


Figure 2-5 Setup of LAN connections for this product.

2. **Set up WAN connection:** Prepare an Ethernet cable for connecting this product to your Cable/DSL modem or Ethernet backbone. Figure 2-6 illustrates the WAN connection.
3. **Connecting the SMC7004BR with your printer:** Use the printer cable to connect to the printer port of this product.

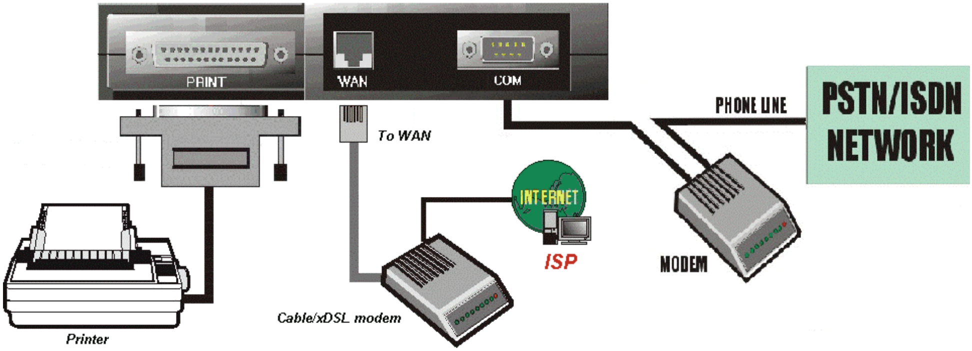


Figure 2-6 Setup of WAN and Printer connections for this product.

4. **Power on:**

   Connect the power cord to power inlet and turn the power switch on. The SMC7004BR will automatically enter the self-test phase. When it is in this phase, the indicator M1 will light up for about 5 seconds, and then M1 will flash 3 times to indicate that the self-test operation is complete. Finally, the M1 will continuously flash once per second to indicate that this product is operating normally.

Chapter 3 Network Settings and Software Installation

To use the SMC7004BR correctly, you must properly configure the network settings of your computers and install the attached setup program into your MS Windows platform (Windows 95/98/NT).

3.1 Setting your computer network settings properly

The default *IP address* of the SMC7004BR is 192.168.123.254, and the default *subnet mask* is 255.255.255.0. These addresses can be changed to fit your needs, but the default values are used in this manual. If the TCP/IP environment of your computer has not yet been configured, you can refer to ***Appendix B*** to configure it. For example,

1. configure *IP* as 192.168.123.1, *subnet mask* as 255.255.255.0 and *gateway* as 192.168.123.254
2. configure your computer to load the TCP/IP setting automatically, i.e., via DHCP server.

After installing the TCP/IP communication protocol, you can use the ***ping*** command to check if your computer has successfully connected to this product. The following example shows the ping procedure for Windows 95 platforms. First, execute the ***ping*** command

```
ping 192.168.123.254
```

If the following messages appear:

```
Pinging 192.168.123.254 with 32 bytes of data:
Reply from 192.168.123.254: bytes=32 time=2ms TTL=64
```

a communication link between your computer and this product has been successfully established.

If you get the following message:

```
Pinging 192.168.123.254 with 32 bytes of data:
```

```
Request timed out.
```

there has been an error in your installation procedure. Please go through the following checklist to ensure proper installation:

1. *Is the Ethernet cable correctly connected between the SMC7004BR and your computer?*

   Tip: The LAN LED of this product and the link LED of the network card on your computer must be lit.

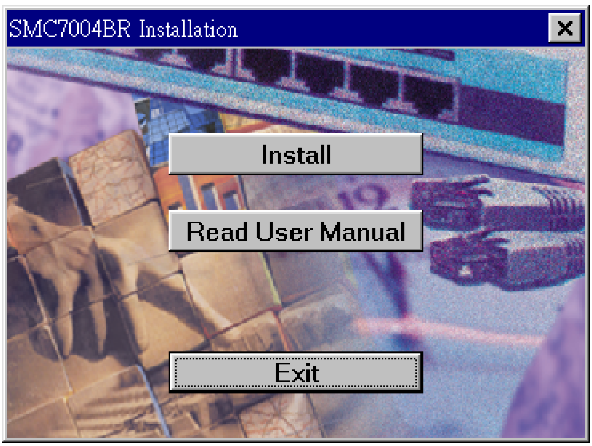
2. *Is the TCP/IP environment of your computer properly configured?*

   Tip: If the IP address of this product is 192.168.123.254, the IP address of your computer must be 192.168.123.X and default gateway must be 192.168.123.254.

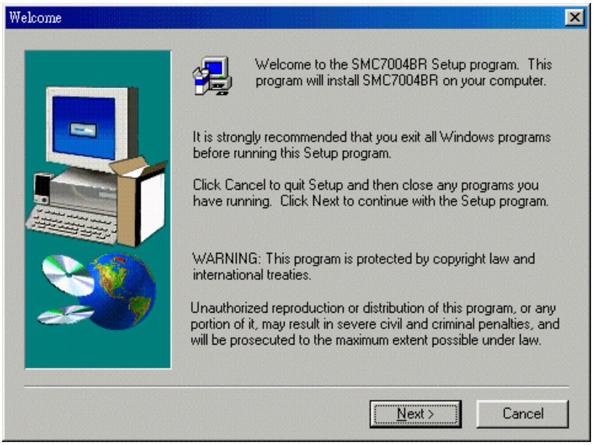
3.2 Install the Software into Your Computers

Skip this section if you do not want to use the print server function of this product.

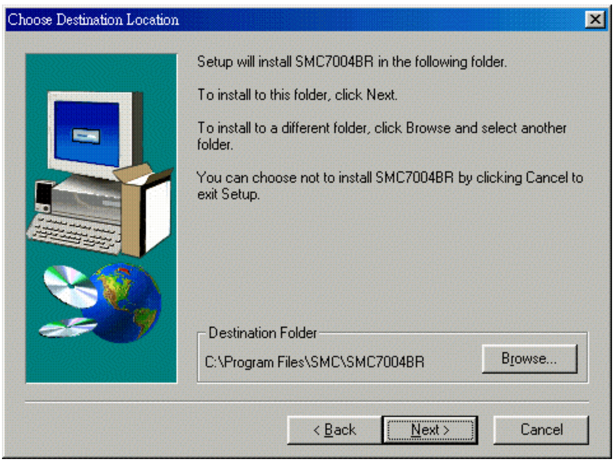
Step 1: Insert the installation CD into your computer's CD-ROM drive. The following window will be shown automatically. If it is not, please run "install.exe" on the CD-ROM.



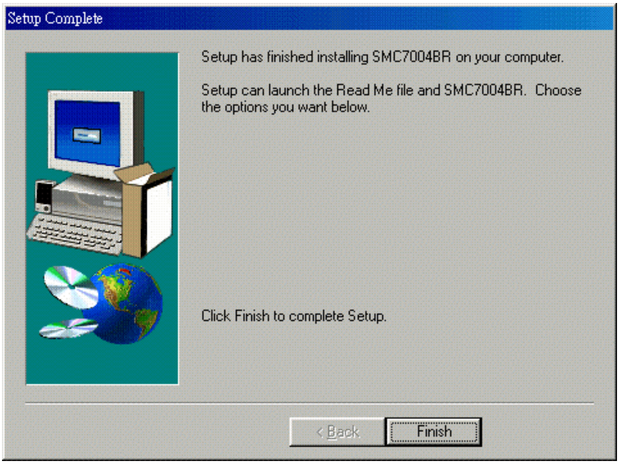
Step 2: Click on the ***INSTALL*** button. Wait for the following ***Welcome*** dialog to appear, and click on the ***Next*** button.



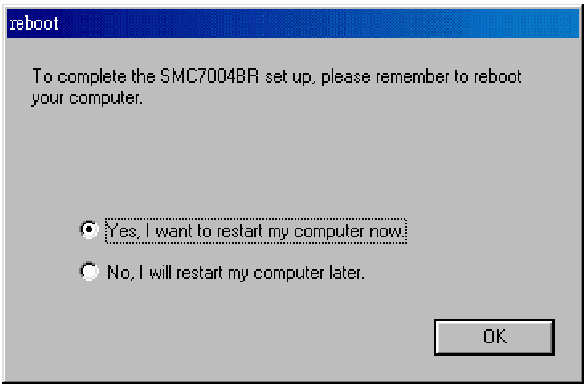
Step 3: Select the destination folder and click on the ***Next*** button. The setup program will then begin to install the programs into the destination folder.



Step 4: When the following window is displayed, click on the ***Finish*** button.



Step 5: Select the item to restart the computer and then click the ***OK*** button to reboot your computer.



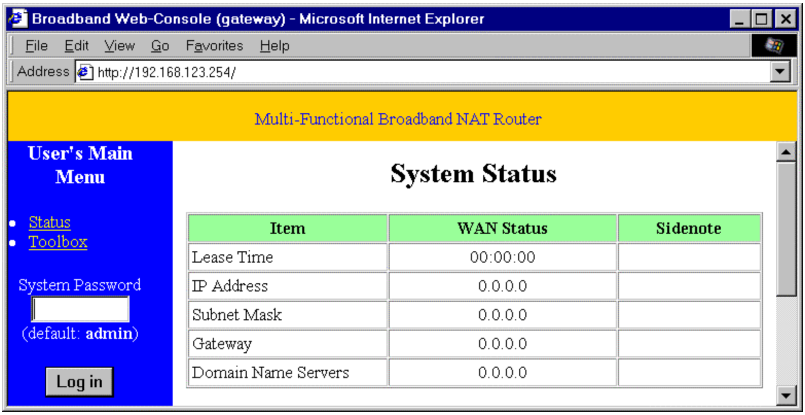
Step 6: After rebooting your computer, the software installation procedure is concluded.

You can now configure the Internet Sharer (refer to Chapter 4) and set up the Print Server (refer to Chapter 5).

Chapter 4 Configuring the SMC7004BR

This product provides a Web-based configuration scheme, which is configurable by Netscape Communicator or Internet Explorer. This approach can be adopted on any MS Windows, Macintosh or UNIX based platform.

4.1 Startup and Log in

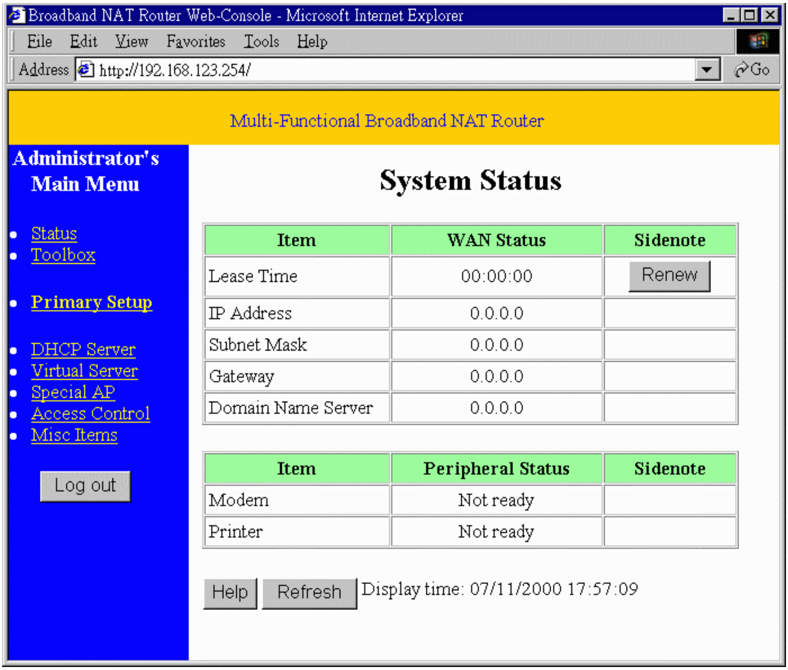


Activate your browser, and ***disable the proxy*** or ***add the IP address of the SMC7004BR into the exceptions***. Then type this product's IP address in the *Location* (for Netscape) or *Address* (for Explorer) field and press ENTER. For example: ***http://192.168.123.254***.

After the connection is established, you will see the web user interface. There are two appearances of the web user interface: *for general users* and *for system administrator*.

To log in as an administrator, enter the system password (the factory setting is "***admin***") in the ***System Password*** field and click the ***Log in*** button. If the password is correct, the web appearance will be changed into administrator configure mode. As listed in its main menu, there are several options for system administration.

4.2 Status



This option provides the function for observing the product's operating status:

A. WAN Port Status.

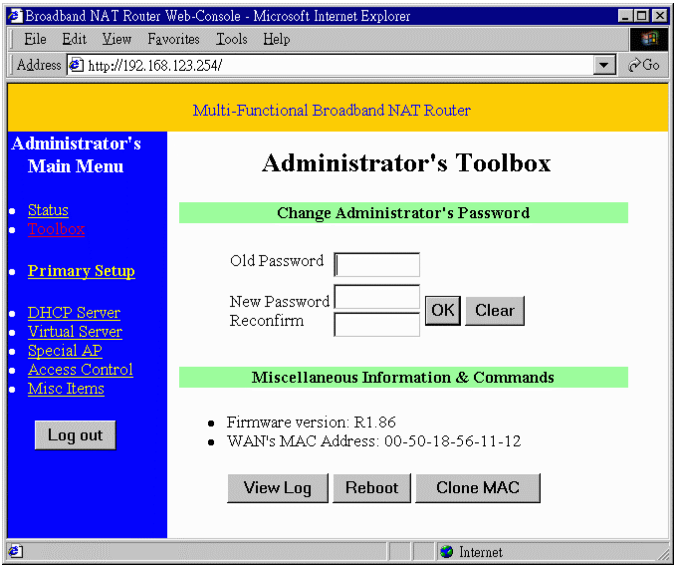
If the WAN port is assigned a dynamic IP, there may appear a "**Renew**" or "**Release**" button on the *Sidenote* column. You can click this button to renew or release the IP manually.

B. Modem Status.

C. Printer Status. The possible kinds of printer status include "*Ready*," "*Not ready*," "*Printing…*", and "*Device error*."

When a job is printing, there may appear a "Kill Job" button on the Sidenote column. You can click this button to kill the current printing job manually.

4.3 Toolbox



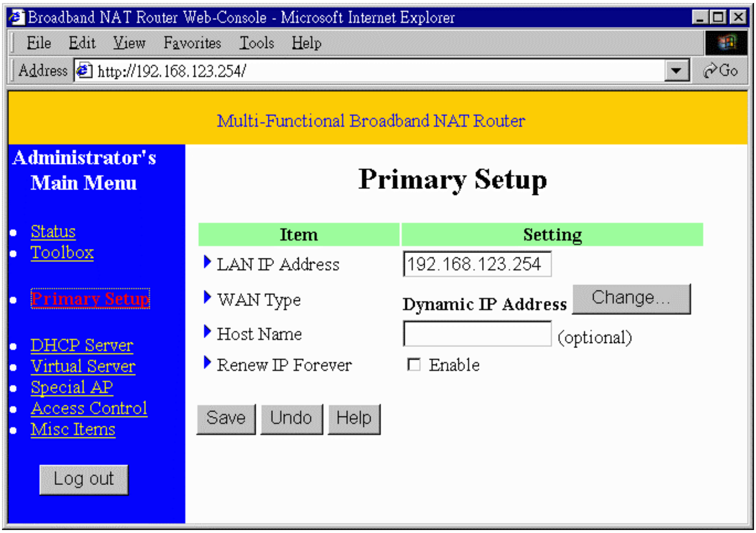
This option enables you to change the administrator password. Also, you can obtain information about ***Firmware version*** and ***WAN's MAC Address***.

You can also reboot the SMC7004BR by clicking the **Reboot** button.

The **Clone MAC** button is useful when your ISP, such as Media One, binds (or locks) your connection to a specific MAC address. Please refer to Appendix C.2 for details.

Note: we strongly recommend that you change the system password for security reasons. If you forget the system password, please refer to Appendix A to reset a new one.

4.4 Primary Setup



This option enables the product to work properly. The setting items and the web appearance depend on the type of WAN. Choose the correct WAN.

1. ***LAN IP Address***: The default IP address is 192.168.123.254. You can change it to fit your needs.

2. ***WAN Type***: WAN connection type of your ISP. You can click **Change** button to choose a correct one from the following four options:

   A. *Static IP Address*: ISP assigns you a static IP address.

   B. *Dynamic IP Address*: Obtain an IP address from ISP automatically. If you are a user of @Home service, please refer to Appendix C.1 for the setup procedure.

   C. *PPP over Ethernet*: Some ISPs require the use of PPPoE to connect to their services.

   D. *Dial-up Network*: To surf the Internet via PSTN/ISDN.

4.4.1 Static IP Address

WAN IP Address, *Subnet Mask*, *Gateway*, *Primary* and *Secondary DNS*: enter the proper setting value provided by your ISP.

4.4.2 Dynamic IP Address

1. *Host Name*: optional. Required by some ISPs; for example, @Home.
2. *Renew IP Forever*: this feature enables the SMC7004BR to renew the IP address automatically when the lease time is expired, even if the system is in an idle state.

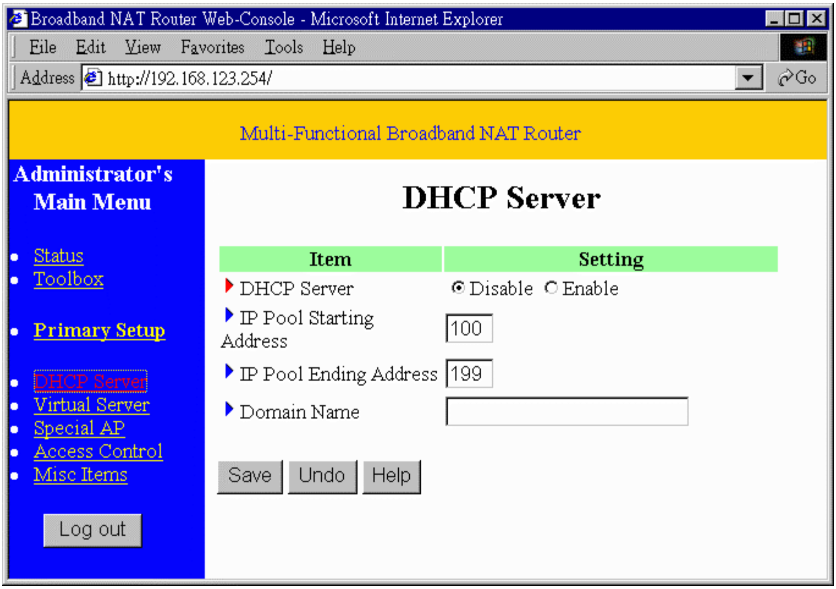
4.4.3 PPP over Ethernet

1. *PPPoE Account* and *Password*: the account and password that your ISP assigned to you. If you don't want to change the password, leave it empty.
2. *PPPoE Service Name*: optional. Input the service name if your ISP requires it.
3. *Maximum Idle Time*: the elapsed time of no activity to disconnect your PPPoE session. Setting it to 0 will disable this feature.

4.4.4 Dial-up Network

1. *Dial-up Telephone*, *Account* and *Password*: assigned by your ISP. If you don't want to change the password, leave it empty.
2. *Primary* and *Secondary DNS*: automatically assigned if they are configured as "0.0.0.0."
3. *Maximum Idle Time*: the elapsed time of no activity to disconnect your dial-up session.
4. *Baud Rate*: the communication speed between this product and your MODEM or ISDN TA.
5. *Extra Setting*: needed to optimize the communication quality between the ISP and your MODEM or ISDN TA

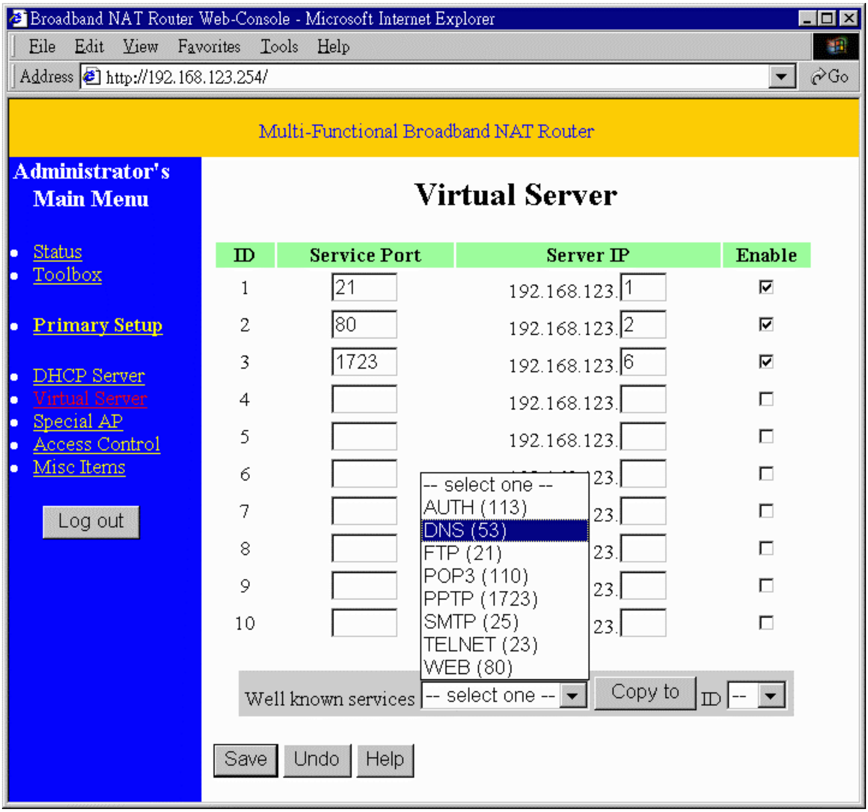
4.5 DHCP Server



The settings of the TCP/IP environment include Host IP, Subnet Mask, Gateway, and DNS configurations. It is not easy to correctly configure all the computers in your LAN environment. Fortunately, DHCP provides a rather simple approach to handle all these settings. This product supports the function of DHCP server. If you enable this product's DHCP server and configure your computers as "automatic IP allocation" mode, when your computer is powered on it will automatically load the proper TCP/IP settings from this product. The settings of DHCP server include the following items:

1. ***DHCP Server***: Choose "*Disable*" or "*Enable*."
2. ***Range of IP Address Pool***: Whenever there is a request, the DHCP server will automatically allocate an unused IP address from the *IP address pool* to the requesting computer. You must specify the starting and ending address of the IP address pool.
3. ***Domain Name***: Optional; this information will be passed to the client. Required by some ISPs, for example, @Home.

4.6 Virtual Server



The SMC7004BR’s NAT (Network Address Translation) firewall filters out unrecognized packets to protect your Intranet, so all hosts behind this product are invisible externally. You can, if you desire, make some of them accessible by enabling the *Virtual Server Mapping*.

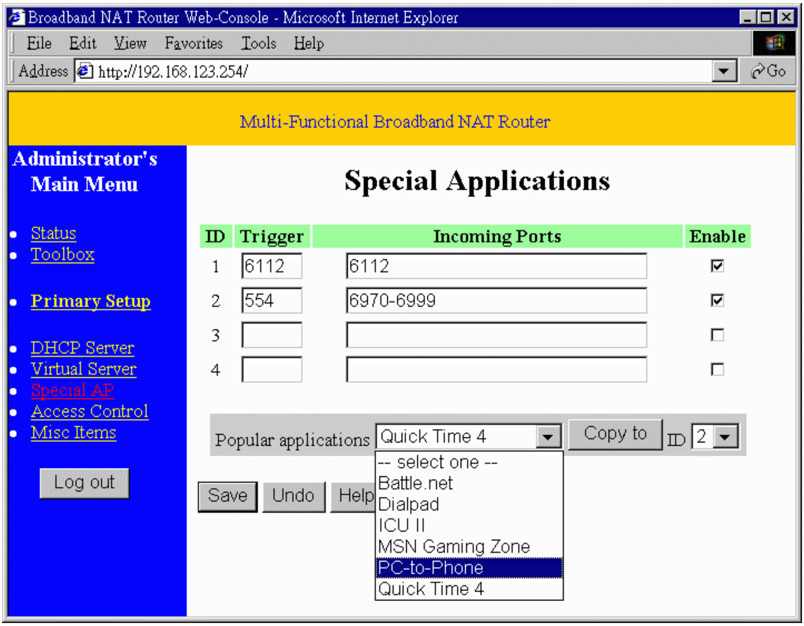
A virtual server is defined as a ***Service Port***, and all requests to this port will be redirected to the computer specified by the ***Server IP***.

For example, if you have an FTP server (port 21) at 192.168.123.1, a Web server (port 80) at

192.168.123.2, and a PPTP VPN server at 192.168.123.6, you need to specify the following virtual server mapping table:

Service Port	Server IP	Enable
21	192.168.123.1	V
80	192.168.123.2	V
1723	192.168.123.6	V

4.7 Special AP



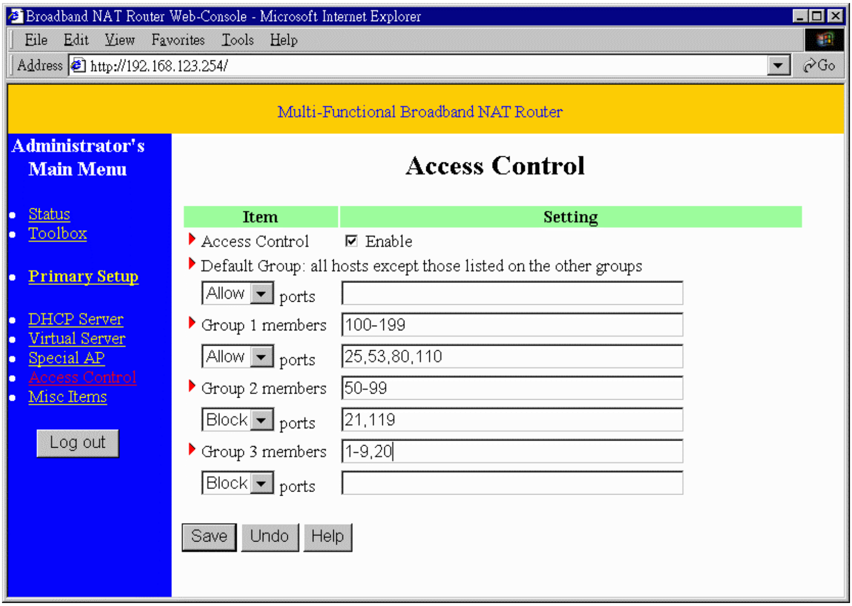
Some applications require multiple connections, such as Internet games, video conferencing, Internet telephony and others. Due to the firewall function, these applications can not work with a pure NAT router. Special Applications allows some of these applications to work with a NAT router. If the Special Applications are still insufficient to allow an application to function correctly, try DMZ host in the *Miscellaneous Items* options.

1. ***Trigger***: the outbound port number that the application assigned first.
2. ***Incoming Ports***: when the trigger packet is detected, the inbound packets to the specified port number are allowed to pass through the firewall.

This product provides some predefined settings in the gray pad on the bottom of the web page. Choose the **Popular application** and click **Copy** to copy the predefined setting.

Note: Only one PC can use each Special Applications tunnel at one time.

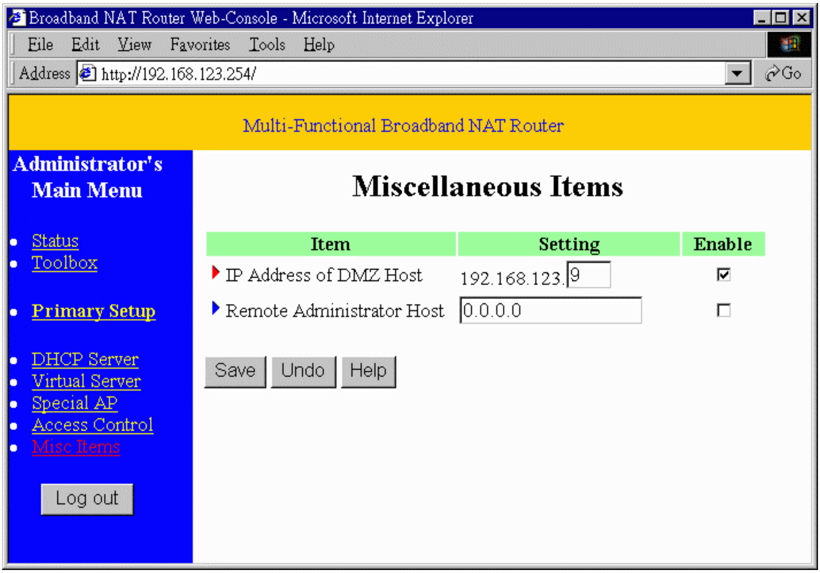
4.8 Access Control



Access Control allows you to assign the access right for each user. First, you must divide users into different groups, as identified by their IP addresses. You can assign the members of Group 1, 2 and 3. The others are all members of Default Group. Second, you must assign the access right of each group. The access right can allow or block users to access specified TCP and UDP ports. For example:

Group	Members	Access Right	Comments
Default	-	Allow ()	No access right (allow nothing)
Group 1	100-199	Allow (25,53,80,110)	Can browse(80), receive(110) and send(25) email only
Group 2	50-99	Block (21,119)	Cannot read net news(119) and FTP(21) only
Group 3	1-9,20	Block ()	Fully access (block nothing)

4.9 Miscellaneous Items



1. ***IP Address of DMZ Host***: The DMZ (Demilitarized Zone) Host is a host without the protection of a firewall. It allows a computer to be exposed to unrestricted 2-way communication. (Note that this feature should be used only when needed.)

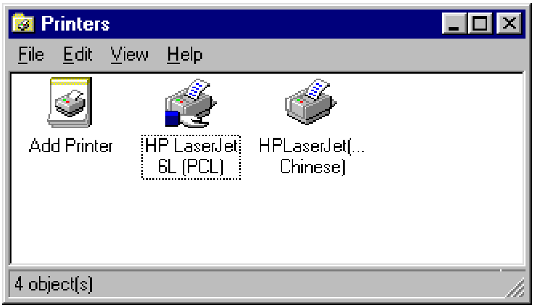
2. ***Remote Administrator Host***: In general, only Intranet users can browse the built-in web pages to perform administration tasks. This feature enables you to perform administration tasks from a remote host. When this feature is enabled, only the specified IP address can perform remote administration. If the specified IP address is 0.0.0.0, any host can connect to this product to perform administration tasks. When this feature is enabled, the web port will be shifted to 88.

Chapter 5 Print Server

The SMC7004BR provides the function of a network print server for MS Windows 95/98/NT and Unix based platforms.

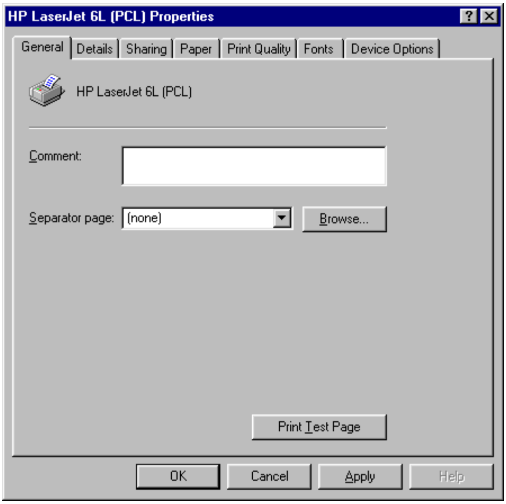
5.1 Configuring on Windows 95/98 Platforms

After you complete the software installation procedure described in Chapter 3, your computer possesses the network printing facility provided by this product. For convenience, we call the printer connected to the printer port the *server printer*. On a Windows 95/98 platform, open the ***Printers*** window in the ***My Computer*** menu:

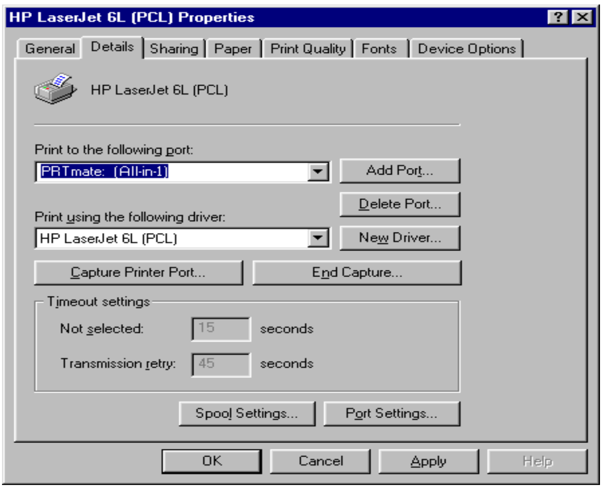


You now can configure the print server:

1. Find the corresponding icon of your *server printer*, for example, the **HP LaserJet 6L**. Right click on that icon, and then select the ***Properties*** item:



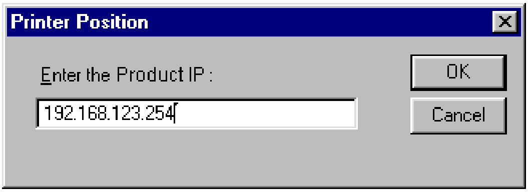
2. Click the ***Details*** item:



3. Choose the "PRTmate: (All-in-1)" from the list attached under the ***Print To*** item. Be sure that the ***Printer Driver*** item is configured to the correct driver of your *server*

printer.

4. Click the ***Port Settings*** button:

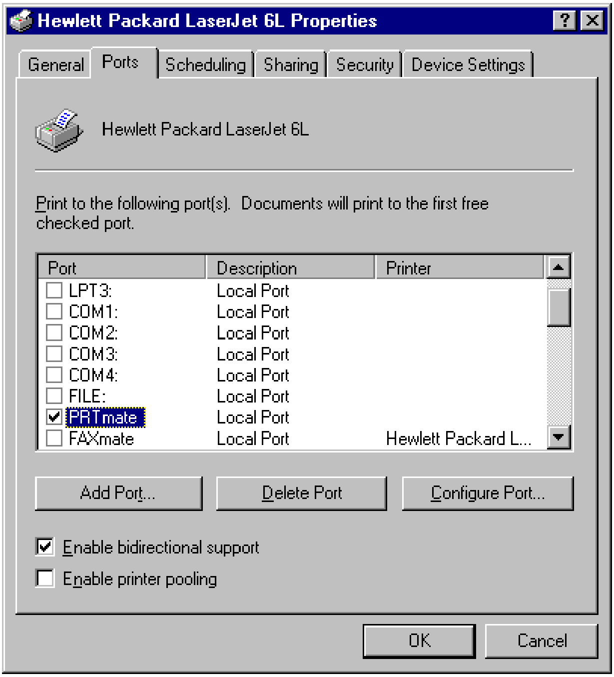


Type in the IP address of this product and then click the ***OK*** button.

5. Make sure that all the settings mentioned above are correct, then click the ***OK*** button.

5.2 Configuring on Windows NT Platforms

The configuration procedure for a Windows NT platform is similar to that of Windows 95/98 except the screen of printer ***Properties***:



Compared to the procedure in the last section, the selection of ***Details*** is equivalent to the selection of **Ports**, and ***Port Settings*** is equivalent to ***Configure Port***.

5.3 Configuring on Unix based Platforms

Please follow the traditional configuration procedure on Unix platforms to set up the print server of this product. The printer name is "lp."

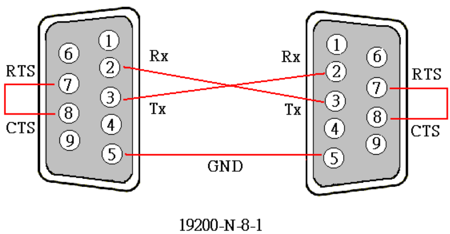
Appendix A: Console Mode

When you forget the system password or the IP address for this product, you need to enter the console mode to reset them.

Before invoking the console program, be sure to find a null modem cable and use it to connect from this product's COM port to your computer's COM port. Then, execute a terminal program, such as the ***Hyper Terminal*** of MS Windows 95. The connection parameters should be set to **19200 8-N-1**. Be sure to reboot the SMC7004BR. When the M1 indicator starts flashing regularly, you can press the "***Enter***" key several times. There should be some messages, and console prompt "**>**" appears in the terminal.

In the console mode, you may reset the IP address and the system password of this product. Please remember to execute the **SR** command to save the changes you have made. For example,

```
IP 192.168.123.254
PW admin
SR
```



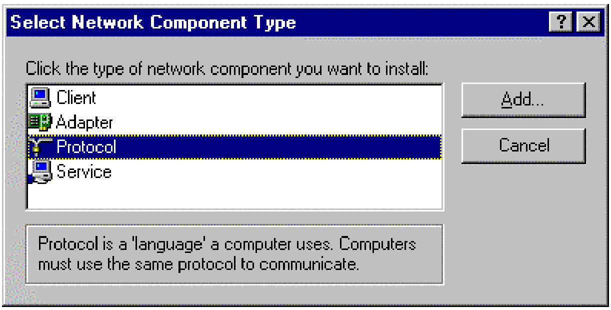
Schematic diagram of null modem cable

Appendix B: TCP/IP Configuration for Windows 95/98

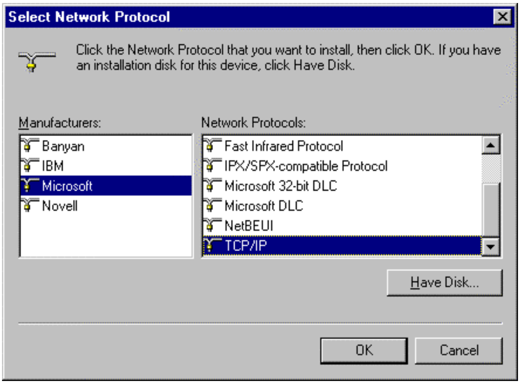
This section will show you how to install the TCP/IP protocol into your personal computer. If you are unfamiliar with it, please refer to your network card manual. Also, Section B.2 shows you how to set TCP/IP values to operate the SMC7004BR correctly.

B.1 Installing TCP/IP protocol into your PC

1. Click the ***Start*** button and choose ***Settings***, then click ***Control Panel***.
2. Double click the ***Network*** icon and select the ***Configuration*** tab in the Network window.
3. Click the ***Add*** button to add the network component into your PC.
4. Double click ***Protocol*** to add TCP/IP protocol.



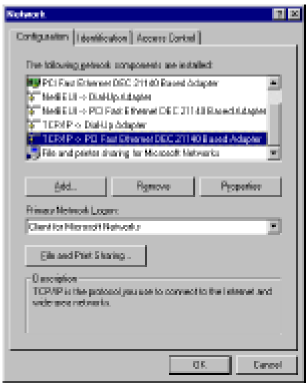
5. Select the ***Microsoft*** item in the *manufacturers* list. And choose ***TCP/IP*** in the *Network Protocols*. Click the ***OK*** button to return to the Network window.



6. The TCP/IP protocol will be listed in the Network window. Click ***OK*** to complete the install procedure and restart your PC to enable the TCP/IP protocol.

B.2 Setting TCP/IP protocol to work with the SMC7004BR

1. Click the ***Start*** button and choose ***Settings***, then click ***Control Panel***.
2. Double click the ***Network*** icon. Select the TCP/IP line that has been assigned to your network card in the ***Configuration*** tab of the Network window.

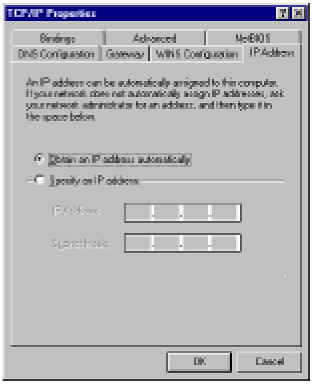


3. Click the ***Properties*** button to set the TCP/IP protocol for the SMC7004BR.

4. You have now two setting methods:

A. obtain IP via DHCP server

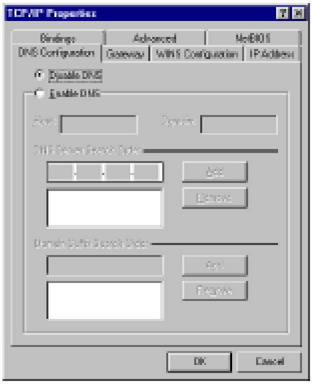
a. Select ***Obtain an IP address automatically*** in the *IP Address* tab.



b. Don't input any values in the *Gateway* tab.



c. Choose ***Disable DNS*** in the *DNS Configuration* tab.



B. Configure the IP manually

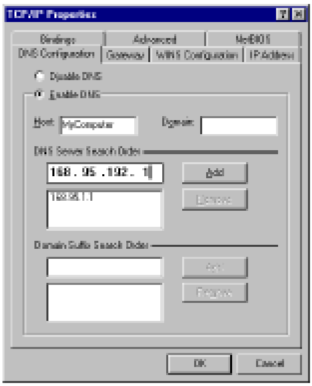
a. Select ***Specify an IP address*** in the *IP Address* tab. The default IP address of this product is 192.168.123.254, You should use 192.168.123.xxx (xxx is between 1 and 253) for *IP Address* field and 255.255.255.0 for *Subnet Mask* field.



b. In the *Gateway* tab, add the IP address of this product (default IP is 192.168.123.254) in the *New gateway* field and click ***Add*** button.



c. In the *DNS Configuration* tab, add the DNS values which are provided by the ISP into *DNS Server Search Order* field and click ***Add*** button.



That's it. You are now ready to start using your SMC7004BR!

Appendix C: Installation Guide For Specific ISP

The WAN types provided by SMC7004BR will cover almost all types of ISP services. Some ISPs, however, have proprietary authentication methods. For example, MediaOne binds your connection with a registered MAC address; @Home assigns you a hostname and requires you to set up the domain name.

This appendix describes the procedure to configure your SMC7004BR to work with these types of ISPs.

C.1 @Home

1. Log in as system administrator and click "*Primary Setup*."
2. Configure the WAN type as "*Dynamic IP Address.*"
3. In the "*Host Name*" field, you must key in the host name specified by your ISP. Say, "C123456-A."
4. Save the setting for "*Primary Setup*."
5. Please click "*DHCP Server*" setting, and configure the domain name as the one specified by your ISP. Say, "xxx.yyy.home.com".
6. Save the setting and reboot the SMC7004BR.
7. After the SMC7004BR is working, please run WINIPCFG in your Windows platform and release and renew the IP address manually. This step ensures that your PC obtains the correct TCP/IP setting from the newly configured SMC7004BR.
8. Close all browsers and restart the browser.

C.2 MediaOne

1. Be sure you have a computer that is already set up to access MediaOne and that the MAC address of the Ethernet adapter used in this computer is the one registered with your ISP. Please use this computer and Ethernet adapter to perform the following steps.

2. Connect the Ethernet adapter to any LAN port of the SMC7004BR and connect the cable modem to the WAN port of SMC7004BR.

3. Power on the SMC7004BR. After it is working, please run WINIPCFG in your Windows platform and release and renew the IP address manually. This step ensures that your PC obtains the correct TCP/IP setting from the newly configured SMC7004BR.

4. Log in as system administrator and click "*Primary Setup*."

5. Configure the WAN type as "*Dynamic IP Address.*"

6. Save the setting for "*Primary Setup*."

7. Click "*Toolbox*" and check the WAN's MAC Address.

8. Click "*Clone MAC*" button. It will copy the MAC address of the Ethernet adapter used in your computer and change the WAN's MAC Address.

9. Reboot SMC7004BR.

NOTE: You can restore the WAN's MAC Address by clicking the "Restore MAC" button.